

## Fuel Cell Cathode Catalyst

### Abstract

A fuel cell cathode catalyst is provided which comprises nanostructured  
5 elements comprising microstructured support whiskers bearing nanoscopic catalyst  
particles. The nanoscopic catalyst particles are made by the alternating application of  
first and second layers, the first layer comprising platinum and the second layer being  
an alloy or intimate mixture of iron and a second metal selected from the group  
consisting of Group VIb metals, Group VIIb metals and Group VIIIb metals other than  
10 platinum and iron, where the atomic ratio of iron to the second metal in the second  
layer is between 0 and 10, where the planar equivalent thickness ratio of the first layer  
to the second layer is between 0.3 and 5, and wherein the average bilayer planar  
equivalent thickness of the first and second layers is less than 100 Å. A method of  
making such nanoscopic catalyst particles comprising the alternate steps of vacuum  
15 deposition of platinum and vacuum deposition of an alloy or intimate mixture of iron  
and a second metal is also provided.